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73 Proprietor: **ROCKFORD AUTOMATION, INCORPORATED**
3381 Forest View Road
Rockford Illinois 61109-1693(US)

72 Inventor: **Canamero, Ernest Virgil**
10111 Campbell Road
Durand Illinois 61024(US)

74 Representative: **Werner, Hans-Karsten, Dr. et al**
Deichmannhaus am Hauptbahnhof
W-5000 Köln 1(DE)

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Description

TECHNICAL FIELD

This invention relates to an enclosed package. More particularly this invention relates to an enclosed package having two surfaces on at least one end sealed together with a hot melt adhesive-covered tearstrip.

BACKGROUND OF THE INVENTION

It is known to provide tear devices, such as tear-strings or tearstrips to open envelopes or packages. For example, tear-strings sealed at only two extreme points along a side of a package have been used for opening packages; however, upon pulling the tear-string to open the package a clean straight edge cannot reproducibly be obtained due to lack of control of the tearline. Furthermore, when using a tear-string, sealed only at specific points, there is a tendency for the tear-string to break if the packaging material resists tearing, and in addition, manufacture of the package has to be precise because adhesion of the packaging material to the tear-string occurs over only a very small area resulting in the tear-string having a tendency to pull loose from the package without effectively opening it.

Hot melt adhesive impregnated tear-strings can be used as an opening device for packages. However, when these strings are heat sealed between two surfaces of packaging material, there is a tendency for the adhesive to flow outward of the string, sealing the package on either side of the string, whereby removal of the tear-string does not effectively open the package.

Tearstrips in the form of ribbons have been used on the outside of the packaging material, one on each surface thereof, along the same edge of the package. These tearstrips have the disadvantage in that a clean straight edge cannot be assured since the ribbon adhered to the outside of the packaging material does not provide a good tear guide. Tearstrips have also been used to seal two surfaces of a package together as well as open the package as shown in Smolderen et al US Patents 3,795,080 and 3,968,926. The tearstrip used is not stated to be a hot melt-covered tearstrip but must be a thermoplastic ribbon-like material which softens upon formation of the seal. Since the tearstrip softens upon sealing and is thermoplastically sealed, upon removing the tearstrip to open the package, substantially perfect lines with virtually no ragged edges are not obtained.

Thus, there is a need to overcome the afore-

mentioned disadvantages of previous packages having tear-strings or tearstrips by providing a package sealed with a tearstrip which can be easily opened by removing the tearstrip which leaves a substantially perfect line with virtually no ragged edges which impede the removal of the contents of the package.

SUMMARY OF THE INVENTION

In accordance with this invention, there is provided an enclosed package having two surfaces sealed together on at least one end and having a tearstrip, characterized in that between the sealed surfaces is present a hot melt adhesive-covered tearstrip sealed in an area along the entire length of the outer edge of the tearstrip, the inner edge of substantially the entire length of the tearstrip remaining unsealed whereupon forcibly removing the tearstrip, the entire length of a surface of a package separates in a line along the unsealed edge of the tearstrip in the direction of the removing force, the tearstrip simultaneously delaminating from the other surface without substantially tearing said other surface thus leaving two substantially nonragged package edges that do not impede the extraction of the package contents.

In accordance with another aspect of this invention, there is provided an enclosed package essentially light opaque and substantially-impermeable to gas, water, and chemical vapor having front and rear surfaces sealed together at an end and having a tearstrip, the improvement wherein at least one sealed end, between the front and rear surfaces, comprises a hot melt adhesive-covered tearstrip sealed in an area along the entire length of the outer edge of the tearstrip, the inner edge of substantially the entire length of the tearstrip remaining unsealed, whereupon forcibly removing the tearstrip the entire length of the front surface of the package separates in a line along the unsealed edge of the tearstrip in the direction of the removing force, the tearstrip simultaneously delaminating from the rear surface without substantially tearing said rear surface thus leaving two substantially nonragged package edges that do not impede the extraction of the package contents.

In accordance with still another aspect of this invention, there is provided an enclosed package, said package containing photographic film and made from a single folded sheet of packaging material which is essentially light opaque, substantially impermeable to gas, water and chemical vapor and having front and rear surfaces of said folded sheet sealed together at one end by means of a hot melt adhesive-covered tearstrip present between said front and rear surfaces, the seal

extending in an area along the entire length of the outer edge of the tearstrip, the inner edge of substantially the entire length of the tearstrip remaining unsealed, the end of the package opposite the tearstrip sealed end being the folded end, and the ends of the package transverse to the folded and the tearstrip sealed ends thereof being sealed by the application of energy, whereupon forcibly removing the tearstrip, the entire length of the front surface of the package separates in a line along the unsealed edge of the tearstrip in the direction of the removing force, the tearstrip simultaneously delaminating from the rear surface without substantially tearing said rear surface thus leaving two substantially nonragged package edges that do not impede the extraction of said photographic film.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention may be more fully understood from the following detailed description thereof taken in connection with the accompanying drawings which form a part of this specification and in which:

FIG. 1a is a view of a package having a tearstrip according to the invention.

FIG. 1b is a cross section along 1b-1b of FIG. 1a.

FIG. 1c is a blowup showing the cross-sectional area of a film in a configuration of the package.

FIG. 1d is a blowup of the upper right corner of the package showing a notch and a portion of the seal.

FIG. 2 is a view of a package similar to FIG. 1a showing the beginning of the removal of the tearstrip.

FIG. 3 is a view of a package similar to FIG. 2 showing complete removal of the tearstrip.

DETAILED DESCRIPTION OF THE INVENTION

The following definitions shall apply throughout the specification and claims:

Hot melt adhesive-covered tearstrip or ribbon means a tearstrip or ribbon impregnated with hot melt adhesive or a tearstrip or ribbon coated on both sides with a hot melt adhesive.

Inner edge of tearstrip remains unsealed along substantially its entire length means the inner edge of the tearstrip is not sealed except at opposite ends transverse to the tearstrip end of the package.

The enclosed package of this invention is prepared from packaging material and at least one seal provided by a hot melt adhesive tearstrip or ribbon (hereinafter referred to throughout the specification as tearstrip or ribbon). The package can

contain different type materials, examples of which are described below. To illustrate, but not limit the invention, the contents are described as photosensitive sheets or elements, e.g. photographic silver halide films with or without the presence of lead screens or x-ray intensifying screens.

The packaging material used in forming the package may be in the form of a single sheet, two sheets or a tube of packaging material. When a single sheet is used to form the package three edges require sealing. When two sheets are used, the package has four sealed edges, and when the packaging material is in tubular form, the package has only two sealed edges. The size of the sheet or sheets of material determine the size of the enclosed package the invention not being limited to any particular size package.

Referring to Figure 1a, an enclosed package 2 (see Figure 1a) is shown wherein two surfaces on at least one end of the package are sealed together with the tearstrip 11 present therebetween. A single sheet of packaging material is folded in half and creased along edge 10, providing adjacent edges 12 which are sealed and an edge 13 opposite the folded and creased edge. Optionally, the free ends of one or both packaging materials along edge 13 may be provided with a notch 17 which exposes a small end portion of tearstrip 11 (Figure 1d) which is located between, and sealed to the inner surfaces of the packaging material located along edge 13. As noted in Example 1 below, the notch(es) can be cut completely through the package without affecting any seal. The notches provide easy access to the tearstrip when it has to be gripped 21 and pulled to open the package. Alternately, if notches are not present, a tearstrip 11 may be used having a length greater than that of the package along edge 13 or 10. Referring to Figures 1b and 1d, seal area 14 is shown where the two surfaces of packaging material and the tearstrip are sealed together. The inner edge 16 of the tearstrip remains unsealed over its entire length. Instead of a completely sealed area 14, as shown in Figures 1b and 1d, sealing together of the two surfaces of packaging material and the tearstrip may be provided with several relatively thin seal lines located across the width of the seal area and along the length of the package at edge 13. Package contents 15 may be in the form of a sheet-like material, e.g., light sensitive films, paper, etc. as shown in Figures 1b and 1c. Referring to Figure 2, a substantially perfect line with virtually no ragged edges 18 is obtained when the tearstrip is removed, e.g., by forcibly pulling or removing the tearstrip. The ribbon delaminates from the packaging material on the surface 19 facing the tearstrip on the face-down side of the package resulting in two substantially perfect straight edges 18 and 20

as shown in Figure 3 that permit the removal of the package contents without damage. This is needed especially when packaging sensitive contents which are especially susceptible to scratches, kinking or folding.

Practically any packaging material can be used to form the package provided its tear strength is less than the tensile strength of the tearstrip or ribbon. Reinforced paper, polymer coated paper, laminates of polyester, paper, and black polyolefin are found to be useful for some applications. Preferably, the packaging material used is substantially impermeable to gas, water, and chemical vapor. Suitable packaging materials impermeable to gas, water, and chemical vapor include paper coated or impregnated with a gas, water, or chemical vapor impermeable material, or laminated to such type of material. Suitable materials include metallized polyester where the metallization is in the form of a foil or a vacuum deposited layer, polypropylene, etc. When used to package light sensitive materials, the packaging material in addition to being gas, water, and chemical vapor impermeable should be opaque to light. Suitable opaque materials include laminates of black polyolefin containing carbon black, a metal layer, and a polyester film as shown in Figure 1c; laminates comprising a polyolefin in between the metal and polyester layers of the above laminate, etc. Preferably the carbon black contained in the polyolefin layer makes it opaque to light. The metal layer may be in the form of a foil or it may be vacuum deposited metal. Preferably aluminum is used as the metal layer. Suitable polyolefins include preferably polyethylene, polypropylene, etc. It is preferred to vacuum package some light sensitive materials. This may be accomplished, for example, by leaving a small portion of the second transverse seal alongside 12 unsealed until the remainder of the package is sealed, applying vacuum, and then sealing the unsealed portion to retain a vacuum environment inside the package. Preferred packaging material for this application comprises a 5% carbon black containing polyethylene layer, a metal layer, and a polyester layer.

The edges of the package may be sealed by the application of energy. Suitable methods of applying energy are by heat sealing, ultrasonically welding, etc. When heat sealing is used as the method for obtaining a seal the surfaces of the packaging material facing each other are preferably thermoplastic. Sealing of the edges, with the exception of the edge containing the tearstrip, can also be accomplished using conventionally known adhesives. However, when light sensitive materials are to be packaged, the seals have to be such that they prevent "light piping" which would result in the destruction of the light-sensitive materials.

The tearstrip or ribbon is a flexible, relatively

strong, stretch resistant, thermoplastic or nonthermoplastic material, e.g., high strength filaments or plastic films, having a tensile strength greater than the shear strength of the packaging material. Otherwise the tearstrip will break or cause the packaging material to fold without tearing it in a substantially perfect line with virtually no ragged edges which can impede the removal of the package contents. Preferably the tearstrip has a tensile strength of at least 40 pounds. The width of the tearstrip can vary depending on the size of the package. Generally the width is about 0.25 to 1.0 inch (~0.32 cm to 2.54 cm).

The tearstrip is covered with a hot melt adhesive. Any hot melt adhesive may be used provided it does not have a deleterious effect on the packaging material, the tearstrip, or the package contents. Furthermore, the hot melt adhesive is selected such that it provides a good seal which, as described above, when the tearstrip is forcibly removed the entire length of a surface of the package separates in a substantially perfect line while the tearstrip simultaneously delaminates from the other surface without substantially tearing the other surface. Suitable adhesives include:

(a) ethylene/vinyl esters, preferably ethylene/vinyl acetate copolymer based hot melt adhesive systems. These hot melt adhesives are nonaqueous, solvent-free and generally comprise about 10-90% by weight ethylene/vinyl acetate copolymer containing about 15-40% by weight of vinyl acetate, about 10-90% by weight of wax, preferably petroleum derived or synthetic wax, and 0-80% by weight of a thermoplastic resin such as rosin, rosin derivatives, coumarone-indene resins, terpene resins, terpene phenolic resins, permanently fusible phenolic resins and petroleum hydrocarbon resins;

(b) copolymers of ethylene with vinyl esters of lower carboxylic acids, containing minor amounts, i.e., up to about 3 weight percent of polymerizable comonomers such as acrylic acid, methacrylic acid, itaconic acid, acrylamide, beta dimethylaminoethyl methacrylate, beta hydroxyethyl acrylate, diallyl maleate, diallyl phthalate, diallylether or ethylene glycol dimethacrylate can be copolymerized, for example, with vinyl acetate, vinyl formate, vinyl propionate, vinyl butyrate, etc. Suitable melt indexes, as measured by ASTM 1238-52T, of about 2-150, preferably about 10-25, with polymerized ethylene content of about 75 weight percent. The polymerized ester content of useful ethylene copolymers is about 25 weight percent;

(c) Macromelt® resins such as polyamide types which are products of Henkel Adhesives Company, a division of Henkel Corporation, 4620 West 77th Street, Minneapolis, MN.

INDUSTRIAL APPLICABILITY

The package of this invention has many uses. In its light opaque embodiment the package is particularly useful for packaging light sensitive materials such as photographic films, e.g., x-ray, graphic arts, etc.; photopolymer elements useful for printing plates, photo resists, etc. and other light-sensitive sheet materials, e.g., diazo, cinnamates, Dylux® photoimageable materials, etc. While not forming a part of this invention suitable photographic silver halide emulsions, preparations, addenda, processing and systems are disclosed by Eastman Kodak in the December 1971 issue of Product Licensing Index in Research Disclosure Number 9232. Suitable photopolymerizable elements are disclosed in U.S. Patent Nos. 3,469,982, 3,475,171, 3,526,504, 3,615,435, 3,649,268, 4,173,673, 4,174,216, 4,229,517, 4,323,636, and 4,323,637.

In a particularly preferred light opaque envelope-like package of this invention, 1 to 3 sheets of x-ray photographic film, either alone or sandwiched between x-ray intensifying screens or protective paper sheets, are contained therein. Preferably the packages for light-sensitive films are vacuum packages. In use, the package containing x-ray films can be exposed when attached to an object and the films are removed from the package and processed. In nonlight opaque package contents such as various solid foods, e.g., peanuts and other snack foods can be present. Such a package when substantially impermeable to gas, water, and chemical vapor is useful for containing liquids, solids in liquids, dispersions, etc. which become contaminated or affected by being exposed to air or environments having high moisture content.

EXAMPLES

The following examples wherein the percentages are by weight illustrate but do not limit the invention. The reference numbers in parentheses refer to similar numbers in the drawings.

EXAMPLE 1

A 17 inch \times 11 inch (43.18 cm \times 27.94 cm) laminate of the following layers: (a) 15 pounds black polyethylene (comprised of polyethylene, ethylene vinyl acetate, and 5% carbon black); (b) 50 pounds black Kraft paper; (c) 25 lbs. bleached polished pouch paper; and (d) 15 pounds white polyethylene, was folded in half and creased on the folded edge 10 to be 8.5 inch \times 11 inch (21.59 cm \times 27.94 cm) in overall size with the black polyeth-

ylene layer (a) of the laminate on the inside of the fold. A 0.25 inch (0.635 cm) wide, 15 inch (38.1 cm) long and 0.010 inch \pm 0.002 inch (0.254 cm \pm 0.005 cm) thick ethylene vinyl acetate based thermoplastic adhesive impregnated ribbon 11, containing 5% carbon black to prevent "light piping", and having a 40 lbs. (18 kg) \pm 2 lbs. (\sim 0.91 kg) tensile strength, was held under tension along the length of the ribbon and within the free ends of the folded laminate along edge (13) such that the ends of the ribbon protruded an equal distance beyond each edge (12) of the folded laminate and the outer edge of the ribbon was flush with edge (13) of the laminate. A 0.125 inch (0.32 cm) wide polytetrafluoroethylene covered heat seal bar, heated to 290° F (143.3° C), was brought down at a pressure of 10 lbs./square inch (0.7 kg/cm²) for 1.5 seconds over the edge (13) of the folded laminate such that the outer edge of the bar was flush with edge (13). The inner black polyethylene surfaces of the laminate along the entire edge (13), and across half the ribbon's width was sealed (14). A transverse seal was provided along one edge 12 such that the inner surfaces of the laminate at that edge were bonded together. An 8 inch \times 10 inch (20.32 cm \times 25.4 cm) sheet of X-ray film (15) comprised of a 0.017 cm thick polyethylene terephthalate film support, two 0.000254 cm silver halide layers, one on each side of the support, and 0.000127 cm thick overcoat layer over each silver halide layer was placed into the pouch formed when edge (12) was sealed. A second transverse seal was provided in a similar manner as described above along the edge opposite that transversely sealed earlier. A triangular shaped notch (17) was punched in the edges of the package at the unsealed edge (16) of the ribbon, using a paper punch.

The package was then placed in a tropical oven at 120° F (48.9° C) and 70% relative humidity for 5 days. The package was then removed and laid flat on a table under safelight conditions. The free end of the ribbon at the notch was grasped at point 21 and pulled away from the package. The unsealed edge of the ribbon caused a straight edge tear 18 across the full length of the face-up side of the package. The ribbon simultaneously delaminated from the surface facing the tearstrip on the face-down side (19) of the package except at the portion initially grasped with the ribbon end. The X-ray film was easily extracted from the package without damage.

The film was then exposed and processed in a conventional manner and showed no abnormalities.

EXAMPLE 2

Example 1 as described above was repeated

with the following exception: a laminate comprised of a 0.0069 cm thick polyethylene film (3) containing 5% carbon black, a 0.00035 inch (~0.00099 cm thick) aluminum foil (4) and a ~0.0011 cm thick clear polyethylene terephthalate film (5) was used instead of the laminate described in Example 1. This embodiment of the package material is shown in FIG. 1c. Similar results were obtained.

Claims

1. An enclosed package (2) having two surfaces sealed together on at least one end and having a tearstrip (11), characterized in that between the sealed surfaces is present a hot melt adhesive-covered tearstrip sealed in an area along the entire length of the outer edge of the tearstrip, the inner edge (16) of substantially the entire length of the tearstrip remaining unsealed, whereupon forcibly removing the tearstrip, the entire length of a surface of the package separates in a line along the unsealed edge of the tearstrip in the direction of the removing force, the tearstrip simultaneously delaminating from the other surface without substantially tearing said other surface thus leaving two substantially nonragged package edges that do not impede the extraction of the package contents.
2. An enclosed package according to Claim 1 wherein the air within the package is evacuated thus forming a vacuum package.
3. An enclosed package according to Claim 1 wherein the sealed surfaces are thermoplastic polymers.
4. An enclosed package according to Claim 1 wherein the sealed surfaces comprise, in order from the inner surface to the outer surface of the package, a polyolefin film, a metal layer, and a polyester film.
5. An enclosed package according to Claim 4 wherein the metal layer is vacuum deposited.
6. An enclosed package according to Claim 4 wherein the metal layer is a foil.
7. An enclosed package according to Claim 4 wherein between the metal layer and the polyester film is a polyolefin film.
8. An enclosed package according to Claim 1 wherein the packaging material is a single

sheet.

9. An enclosed envelope according to Claim 8 wherein the ends of the package transverse to the tearstrip-sealed end of the package are sealed by ultrasonic welding.
10. An enclosed package according to Claim 8 wherein the ends of the package transverse to the tearstrip sealed end of the package are heat sealed.
11. An enclosed package according to Claim 1 wherein the tearstrip is a ribbon impregnated with a hot melt adhesive.
12. An enclosed package according to Claim 1 wherein the tearstrip is a ribbon coated on both sides with a hot melt adhesive.
13. An enclosed package according to Claim 11 wherein the hot melt adhesive is an ethylene vinyl acetate based thermoplastic adhesive.
14. An enclosed package according to Claim 12 wherein the hot melt is an ethylene vinyl acetate based thermoplastic adhesive.
15. An enclosed package according to Claim 1 having a notch present in at least one edge of the package transverse to the tearstrip and at the unsealed inner edge of the tearstrip.
16. An enclosed package according to Claim 15 wherein two notches are present, one on each edge of the package transverse to the tearstrip.
17. An enclosed package according to Claim 1 wherein the unsealed inner edge of the tearstrip is 0.125 inch (~.32 cm) wide.
18. An enclosed package according to Claim 1 which is essentially light opaque and substantially impermeable to gas, water, and chemical vapor.
19. An enclosed package according to Claim 18 wherein the air within the package is evacuated thus forming a vacuum package.
20. An enclosed package according to Claim 18 wherein the package sealed surfaces are thermoplastic polymers.
21. An enclosed package according to claim 18 wherein the sealed surfaces comprise, in order from the inner surface to the outer surface of

- the package, a polyolefin film, a metal layer, and a polyester film.
22. An enclosed package according to Claim 21 wherein the metal layer is vacuum deposited. 5
 23. An enclosed package according to Claim 21 wherein the metal layer is a foil.
 24. An enclosed package according to Claim 21 wherein between the metal layer and the polyester film is a polyolefin film. 10
 25. An enclosed package according to Claim 18 wherein the package material is a single sheet. 15
 26. An enclosed package according to Claim 25 wherein the ends of the package transverse to the tearstrip sealed end of the package are sealed by ultrasonic welding. 20
 27. An enclosed package according to Claim 25 wherein the ends of the package transverse to the tearstrip sealed end of the package are heat sealed. 25
 28. An enclosed package according to Claim 18 wherein the tearstrip is a ribbon impregnated with a hot melt adhesive. 30
 29. An enclosed package according to Claim 18 wherein the tearstrip is a ribbon coated on both sides with a hot melt adhesive.
 30. An enclosed package according to Claim 28 wherein the hot melt adhesive is an ethylene vinyl acetate based thermoplastic adhesive. 35
 31. An enclosed package according to Claim 29 wherein the hot melt adhesive is an ethylene vinyl acetate based thermoplastic adhesive. 40
 32. An enclosed package according to Claim 18 having a notch present in at least one edge of the package transverse to the tearstrip and at the unsealed inner edge of the tearstrip. 45
 33. An enclosed package according to Claim 32 wherein two notches are present, one on each edge of the package transverse to the tearstrip. 50
 34. An enclosed package according to Claim 18 wherein the unsealed inner edge of the tearstrip is 0.125 inch (~0.32 cm) wide. 55
 35. An enclosed package according to Claim 18 wherein at least one silver halide photographic film element is present within the package.
 36. An enclosed package according to Claim 19 wherein at least one silver halide photographic film element is present within the package.
 37. An enclosed package according to Claim 18 wherein at least one silver halide film element is coated on both sides.
 38. An enclosed envelope-like package according to Claim 19 wherein at least one silver halide photographic film element is coated on both sides.
 39. An enclosed package according to Claim 35 wherein at least one silver halide photographic film element is sandwiched between x-ray intensifying screens.
 40. An enclosed package according to Claim 35 wherein at least one silver halide photographic film element is sandwiched between paper sheets.
 41. An enclosed-package according to claim 1 containing photographic film and made from a single folded sheet of packaging material which is essentially light opaque, substantially impermeable to gas, water, and chemical vapor and having front and rear surfaces of said folded sheet sealed together at one end by means of the hot melt adhesive-covered tearstrip present between said front and rear surfaces, the end of the package opposite the tearstrip sealed end being the folded end, and the ends of the package transverse to the folded and the tearstrip sealed ends thereof being sealed by the application of energy.
 42. An enclosed package for photographic film according to Claim 41 wherein 1 to 3 photographic films are present.
 43. An enclosed package for photographic film according to Claim 42 wherein the photographic films are sandwiched between x-ray intensifying screens.
 44. An enclosed package for photographic film according to Claim 42 wherein the ends of the package transverse to the folded and tearstrip sealed ends thereof are heat sealed.
 45. An enclosed package for photographic film according to Claim 42 wherein the ends of the package transverse to the folded and tearstrip sealed end thereof are ultrasonic welded.

46. An enclosed package for photographic film according to Claim 42 wherein the air within the package is evacuated thus forming a vacuum package.

Revendications

1. Un emballage fermé (2) ayant deux surfaces scellées ensemble sur au moins une extrémité et comportant une bande de déchirure (11), caractérisé en ce que, entre les surfaces scellées, se trouve une bande de déchirure recouverte d'adhésif thermofusible, scellée dans une zone s'étendant sur toute la longueur du bord extérieur de la bande de déchirure, le bord intérieur (16) de sensiblement toute la longueur de la bande de déchirure restant non scellé, si bien qu'en enlevant par force la bande de déchirure, toute la longueur d'une surface de l'emballage se sépare le long d'une ligne suivant le bord non scellé de la bande de déchirure dans la direction de la force d'enlèvement, la bande de déchirure se détachant simultanément de l'autre surface sans déchirer sensiblement cette autre surface en laissant ainsi deux bords d'emballage sensiblement non déchiquetés qui n'empêchent pas l'extraction du contenu de l'emballage.
2. Un emballage fermé selon la revendication 1, dans lequel l'air contenu dans l'emballage est évacué pour former ainsi un emballage sous vide.
3. Un emballage fermé selon la revendication 1, dans lequel les surfaces scellées sont en polymères thermoplastiques.
4. Un emballage fermé selon la revendication 1, dans lequel les surfaces scellées comprennent, dans cet ordre, de la surface intérieure à la surface extérieure de l'emballage, une pellicule de polyoléfine, une couche métallique et une pellicule de polyester.
5. Un emballage fermé selon la revendication 4, dans lequel la couche métallique est déposée sous vide.
6. Un emballage fermé selon la revendication 4, dans lequel la couche métallique est une feuille métallique.
7. Un emballage fermé selon la revendication 4, dans lequel, entre la couche métallique et la pellicule de polyester, se trouve une pellicule de polyoléfine.
8. Un emballage fermé selon la revendication 1, dans lequel le matériau d'emballage est une feuille unique.
9. Une enveloppe fermée selon la revendication 8, dans laquelle les extrémités de l'emballage qui sont transversales à l'extrémité de l'emballage scellée avec la bande de déchirure sont scellées par soudage aux ultrasons.
10. Un emballage fermé selon la revendication 8, dans lequel les extrémités de l'emballage qui sont transversales à l'extrémité de l'emballage scellée avec la bande de déchirure sont scellées thermiquement.
11. Un emballage fermé selon la revendication 1, dans lequel la bande de déchirure est un ruban imprégné d'un adhésif thermofusible.
12. Un emballage fermé selon la revendication 1, dans lequel la bande de déchirure est un ruban enduit sur ses deux faces d'un adhésif thermofusible.
13. Un emballage fermé selon la revendication 11, dans lequel l'adhésif thermofusible est un adhésif thermoplastique à base d'éthylène-acétate de vinyle.
14. Un emballage fermé selon la revendication 12, dans lequel l'adhésif thermofusible est un adhésif thermoplastique à base d'éthylène-acétate de vinyle.
15. Un emballage fermé selon la revendication 1, comportant une encoche présente sur au moins un bord de l'emballage qui est transversal à la bande de déchirure et au niveau du bord intérieur non scellé de la bande de déchirure.
16. Un emballage fermé selon la revendication 15, dans lequel deux encoches sont présentes, une sur chaque bord de l'emballage qui est transversal à la bande de déchirure.
17. Un emballage fermé selon la revendication 1, dans lequel le bord intérieur non scellé de la bande de déchirure a une largeur d'environ 0,32 cm (0,125 inch).
18. Un emballage fermé selon la revendication 1, qui est essentiellement opaque à la lumière et sensiblement imperméable aux gaz, à l'eau et aux vapeurs chimiques.
19. Un emballage fermé selon la revendication 18,

- dans lequel l'air contenu dans l'emballage est évacué pour former ainsi un emballage sous vide.
20. Un emballage fermé selon la revendication 18, dans lequel les surfaces scellées de l'emballage sont en polymères thermoplastiques. 5
21. Un emballage fermé selon la revendication 18, dans lequel les surfaces scellées comprennent, dans cet ordre, de la surface intérieure à la surface extérieure de l'emballage, une pellicule de polyoléfine, une couche métallique et une pellicule de polyester. 10
22. Un emballage fermé selon la revendication 21, dans lequel la couche métallique est déposée sous vide. 15
23. Un emballage fermé selon la revendication 21, dans lequel la couche métallique est une feuille métallique. 20
24. Un emballage fermé selon la revendication 21, dans lequel, entre la couche métallique et la pellicule de polyester, se trouve une pellicule de polyoléfine. 25
25. Un emballage fermé selon la revendication 18, dans lequel le matériau d'emballage est une feuille unique. 30
26. Un emballage fermé selon la revendication 25, dans lequel les extrémités de l'emballage qui sont transversales à l'extrémité de l'emballage scellée avec la bande de déchirure sont scellées par soudage aux ultrasons. 35
27. Un emballage fermé selon la revendication 25, dans lequel les extrémités de l'emballage qui sont transversales à l'extrémité de l'emballage scellée avec la bande de déchirure sont scellées thermiquement. 40
28. Un emballage fermé selon la revendication 18, dans lequel la bande de déchirure est un ruban imprégné d'un adhésif thermofusible. 45
29. Un emballage fermé selon la revendication 18, dans lequel la bande de déchirure est un ruban enduit sur ses deux faces d'un adhésif thermofusible. 50
30. Un emballage fermé selon la revendication 28, dans lequel l'adhésif thermofusible est un adhésif thermoplastique à base d'éthylène-acétate de vinyle. 55
31. Un emballage fermé selon la revendication 29, dans lequel l'adhésif thermofusible est un adhésif thermoplastique à base d'éthylène-acétate de vinyle.
32. Un emballage fermé selon la revendication 18, comportant une encoche présente sur au moins un bord de l'emballage qui est transversal à la bande de déchirure et au niveau du bord intérieur non scellé de la bande de déchirure.
33. Un emballage fermé selon la revendication 32, dans lequel deux encoches sont présentes, une sur chaque bord de l'emballage qui est transversal à la bande de déchirure.
34. Un emballage fermé selon la revendication 18, dans lequel le bord intérieur non scellé de la bande de déchirure a une largeur d'environ 0,32 cm (0,125 inch).
35. Un emballage fermé selon la revendication 18, dans lequel au moins un élément de pellicule photographique à l'halogénure d'argent est présent à l'intérieur de l'emballage.
36. Un emballage fermé selon la revendication 19, dans lequel au moins un élément de pellicule photographique à l'halogénure d'argent est présent à l'intérieur de l'emballage.
37. Un emballage fermé selon la revendication 18, dans lequel au moins un élément de pellicule à l'halogénure d'argent est enduit sur deux faces.
38. Un emballage fermé semblable à une enveloppe selon la revendication 19, dans lequel au moins un élément de pellicule photographique à l'halogénure d'argent est enduit sur deux faces.
39. Un emballage fermé selon la revendication 35, dans lequel au moins un élément de pellicule photographique à l'halogénure d'argent est intercalé entre des écrans renforceurs à rayons X.
40. Un emballage fermé selon la revendication 35, dans lequel au moins un élément de pellicule photographique à l'halogénure d'argent est intercalé entre des feuilles de papier.
41. Un emballage fermé selon la revendication 1, contenant une pellicule photographique et fabriqué à partir d'une unique feuille pliée de matériau d'emballage qui est essentiellement

- opaque à la lumière, sensiblement imperméable aux gaz, à l'eau et aux vapeurs chimiques et où les surfaces avant et arrière de ladite feuille pliée sont scellées ensemble au niveau d'une extrémité au moyen de la bande de déchirure recouverte d'adhésif thermofusible qui est présente entre lesdites surfaces avant et arrière, l'extrémité de l'emballage qui est opposée à l'extrémité scellée avec la bande de déchirure étant l'extrémité pliée, et les extrémités de l'emballage qui sont transversales à ses extrémités pliée et scellée avec la bande de déchirure étant scellées par application d'énergie.
42. Un emballage fermé pour pellicule photographique selon la revendication 41, dans lequel 1 à 3 pellicules photographiques sont présentes.
43. Un emballage fermé pour pellicule photographique selon la revendication 42, dans lequel les pellicules photographiques sont intercalés entre des écrans renforceurs à rayons X.
44. Un emballage fermé pour pellicule photographique selon la revendication 42, dans lequel les extrémités de l'emballage qui sont transversales à ses extrémités pliée et scellée avec la bande de déchirure sont scellées thermiquement.
45. Un emballage fermé pour pellicule photographique selon la revendication 42, dans lequel les extrémités de l'emballage qui sont transversales à ses extrémités pliée et scellée avec la bande de déchirure sont soudées aux ultrasons.
46. Un emballage fermé pour pellicule photographique selon la revendication 42, dans lequel l'air contenu dans l'emballage est évacué pour former ainsi un emballage sous vide.
- Ansprüche**
1. Verpackungshülle (2) mit zwei an wenigstens einem Ende miteinander verschmolzenen Flächen und einem Aufreißstreifen (11), dadurch gekennzeichnet, daß zwischen den verschmolzenen Flächen ein mit Schmelzkleber überzogener Aufreißstreifen vorhanden ist, der im Bereich der gesamten Länge der Außenkante des Aufreißstreifens angeschmolzen ist, wobei die Innenkante (16) im wesentlichen über die gesamte Länge des Aufreißstreifens unvereschmolzen bleibt, so daß bei kräftigem Abziehen des Aufreißstreifens die Oberfläche der Verpackung in einer Linie längs der unvereschmolzenen Kante des Aufreißstreifens in Richtung der abziehenden Kraft in ihrer gesamten Länge aufreißt, wobei sich der Aufreißstreifen gleichzeitig von der anderen Oberfläche ablöst ohne diese andere Oberfläche erheblich einzureißen, so daß zwei im wesentlichen unverzackte Kanten verbleiben, die die Entnahme des Packungsinhalts nicht behindern.
2. Verpackungshülle nach Anspruch 1, wobei die Luft innerhalb der Verpackung evakuiert ist, so daß eine Vakuumpackung entsteht.
3. Verpackungshülle nach Anspruch 1, wobei die verschmolzenen Flächen thermoplastische Polymere sind.
4. Verpackungshülle nach Anspruch 1, wobei die verschmolzenen Flächen in Richtung von der inneren hin zur äußeren Oberfläche der Verpackung aus einem Polyethylenfilm, einer Metallschicht und einem Polyesterfilm aufgebaut sind.
5. Verpackungshülle nach Anspruch 4, wobei die Metallschicht im Vakuum aufgebracht wird.
6. Verpackungshülle nach Anspruch 4, wobei die Metallschicht eine Folie ist.
7. Verpackungshülle nach Anspruch 4, wobei sich zwischen der Metallschicht und dem Polyesterfilm ein Polyolefinfilm befindet.
8. Verpackungshülle nach Anspruch 1, wobei das Verpackungsmaterial aus einer einzigen Lage besteht.
9. Verpackungshülle nach Anspruch 8, wobei die Enden der Verpackung transversal zum mit dem Aufreißstreifen verschmolzenen Ende durch Ultraschallschweißen verschmolzen werden.
10. Verpackungshülle nach Anspruch 8, wobei die Enden der Verpackung transversal zum mit dem Aufreißstreifen verschmolzenen Ende durch Erhitzen verschmolzen werden.
11. Verpackungshülle nach Anspruch 1, wobei der Aufreißstreifen ein mit Schmelzkleber imprägniertes Band ist.
12. Verpackungshülle nach Anspruch 1, wobei der Aufreißstreifen ein beidseitig mit Schmelzkleber beschichtetes Band ist.

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| <p>13. Verpackungshülle nach Anspruch 11, wobei der Schmelzkleber ein thermoplastischer Klebstoff auf Ethylenvinylacetat-Basis ist.</p> <p>14. Verpackungshülle nach Anspruch 12, wobei der Schmelzkleber ein thermoplastischer Klebstoff auf Ethylenvinylacetat-Basis ist.</p> <p>15. Verpackungshülle nach Anspruch 1, wobei an wenigstens einer Kante der Packung transversal zum Aufreißstreifen und an der unverschmolzenen Innenkante des Aufreißstreifens eine Kerbe vorhanden ist.</p> <p>16. Verpackungshülle nach Anspruch 15, wobei zwei Kerben vorhanden sind, und zwar je eine an jeder Kante der Packung transversal zum Aufreißstreifen.</p> <p>17. Verpackungshülle nach Anspruch 1, wobei die unverschmolzene Innenkante des Aufreißstreifens 0,125 inch (0,32 cm) breit ist.</p> <p>18. Verpackungshülle nach Anspruch 1, die im wesentlichen lichtundurchlässig und im wesentlichen undurchlässig für Gase, Wasser und chemische Dämpfe ist.</p> <p>19. Verpackungshülle nach Anspruch 18, wobei die Luft innerhalb der Verpackung evakuiert ist, so daß eine Vakuumpackung entsteht.</p> <p>20. Verpackungshülle nach Anspruch 18, wobei die verschmolzenen Oberflächen der Verpackung thermoplastische Polymere sind.</p> <p>21. Verpackungshülle nach Anspruch 18, wobei die verschmolzenen Oberflächen in Richtung von der inneren hin zur äußeren Oberfläche der Verpackung aus einem Polyethylenfilm, einer Metallschicht und einem Polyesterfilm aufgebaut sind.</p> <p>22. Verpackungshülle nach Anspruch 21, wobei die Metallschicht im Vakuum aufgebracht wird.</p> <p>23. Verpackungshülle nach Anspruch 21, wobei die Metallschicht eine Folie ist.</p> <p>24. Verpackungshülle nach Anspruch 21, wobei sich zwischen der Metallschicht und dem Polyesterfilm ein Polyolefinfilm befindet.</p> <p>25. Verpackungshülle nach Anspruch 18, wobei das Verpackungsmaterial aus einer einzigen Lage besteht.</p> <p>26. Verpackungshülle nach Anspruch 25, wobei</p> | <p>5</p> <p>10</p> <p>15</p> <p>20</p> <p>25</p> <p>30</p> <p>35</p> <p>40</p> <p>45</p> <p>50</p> <p>55</p> | <p>die Enden der Verpackung transversal zum mit dem Aufreißstreifen verschmolzenen Ende durch Ultraschallschweißen verschmolzen werden.</p> <p>27. Verpackungshülle nach Anspruch 25, wobei die Enden der Verpackung transversal zum mit dem Aufreißstreifen verschmolzenen Ende durch Erhitzen verschmolzen werden.</p> <p>28. Verpackungshülle nach Anspruch 18, wobei der Aufreißstreifen ein mit Schmelzkleber imprägniertes Band ist.</p> <p>29. Verpackungshülle nach Anspruch 18, wobei der Aufreißstreifen ein beidseitig mit Schmelzkleber beschichtetes Band ist.</p> <p>30. Verpackungshülle nach Anspruch 28, wobei der Schmelzkleber ein thermoplastischer Klebstoff auf Ethylenvinylacetat-Basis ist.</p> <p>31. Verpackungshülle nach Anspruch 29, wobei der Schmelzkleber ein thermoplastischer Klebstoff auf Ethylenvinylacetat-Basis ist.</p> <p>32. Verpackungshülle nach Anspruch 18, wobei an wenigstens einer Kante der Packung transversal zum Aufreißstreifen und an der unverschmolzenen Innenkante des Aufreißstreifens eine Kerbe vorhanden ist.</p> <p>33. Verpackungshülle nach Anspruch 32, wobei zwei Kerben vorhanden sind, und zwar je eine an jeder Kante der Packung transversal zum Aufreißstreifen.</p> <p>34. Verpackungshülle nach Anspruch 18, wobei die unverschmolzene Innenkante des Aufreißstreifens 0,125 inch ($\approx 0,32$ cm) breit ist.</p> <p>35. Verpackungshülle nach Anspruch 18, wobei wenigstens ein photographisches Silberhalogenid-Filmelement in der Packung vorhanden ist.</p> <p>36. Verpackungshülle nach Anspruch 19, wobei wenigstens ein photographisches Silberhalogenid-Filmelement in der Packung vorhanden ist.</p> <p>37. Verpackungshülle nach Anspruch 18, wobei wenigstens ein Silberhalogenid-Filmelement beidseitig beschichtet ist.</p> <p>38. Umschlagähnliche Verpackungshülle nach Anspruch 19, wobei wenigstens ein photographisches Silberhalogenid-Filmelement beidseitig</p> |
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beschichtet ist.

39. Verpackungshülle nach Anspruch 35, wobei sich wenigstens ein photographisches Silberhalogenid-Filmelement zwischen zwei röntgenstrahlenverstärkenden Schirmen befindet. 5
40. Verpackungshülle nach Anspruch 35, wobei sich wenigstens ein photographisches Silberhalogenid-Filmelement zwischen zwei Papierblättern befindet. 10
41. Verpackungshülle nach Anspruch 1, die einen photographischen Film enthält und aus einem einzigen gefalteten Blatt aus Verpackungsmaterial gemacht ist, das im wesentlichen lichtundurchlässig, im wesentlichen undurchlässig für Gase, Wasser und chemische Dämpfe ist, wobei Vorder- und Rückseite dieses gefalteten Blattes an einem Ende mit Hilfe eines schmelzkleberbeschichteten Aufreißstreifens versiegelt ist, der sich zwischen der Vorder- und Rückseite befindet, wobei das Packungsende gegenüber dem mit dem Aufreißstreifen versiegelten Ende das gefaltete Ende ist, und die Packungsenden transversal zum gefalteten und zum mit dem Aufreißstreifen versiegelten Ende durch Anwendung von Energie verschmolzen werden. 15
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25
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42. Verpackungshülle für photographischen Film nach Anspruch 41, worin 1 bis 3 photographische Filme vorhanden sind. 35
43. Verpackungshülle für photographischen Film nach Anspruch 42, wobei sich die photographischen Filme zwischen zwei röntgenstrahlenverstärkenden Schirmen befinden. 40
44. Verpackungshülle für photographischen Film nach Anspruch 42, wobei die Enden der Verpackung transversal zum gefalteten und zum mit dem Aufreißstreifen verschmolzenen Ende durch Erhitzen verschmolzen werden. 45
45. Verpackungshülle für photographischen Film nach Anspruch 42, wobei die Enden der Verpackung transversal zum gefalteten und zum mit dem Aufreißstreifen verschmolzenen Ende durch Ultraschallschweißen verschmolzen werden. 50
46. Verpackungshülle für photographischen Film nach Anspruch 42, wobei die Luft innerhalb der Verpackung evakuiert ist, so daß eine Vakuumpackung entsteht. 55

FIG. 1d

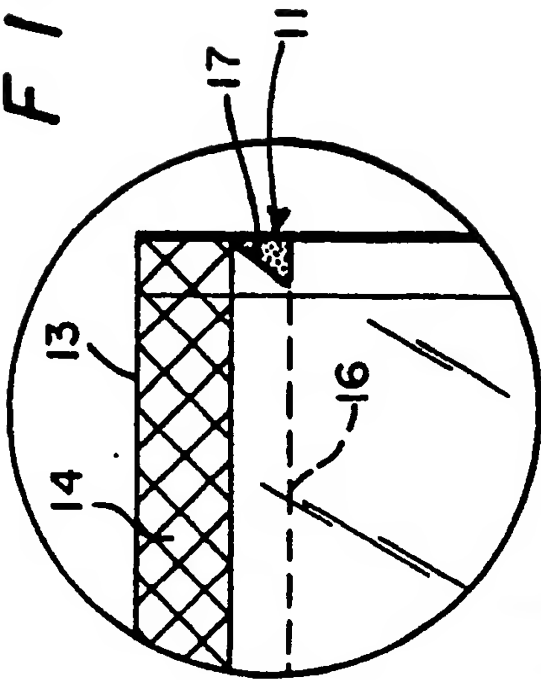


FIG. 1c

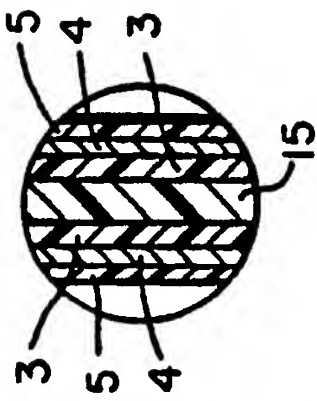


FIG. 1b

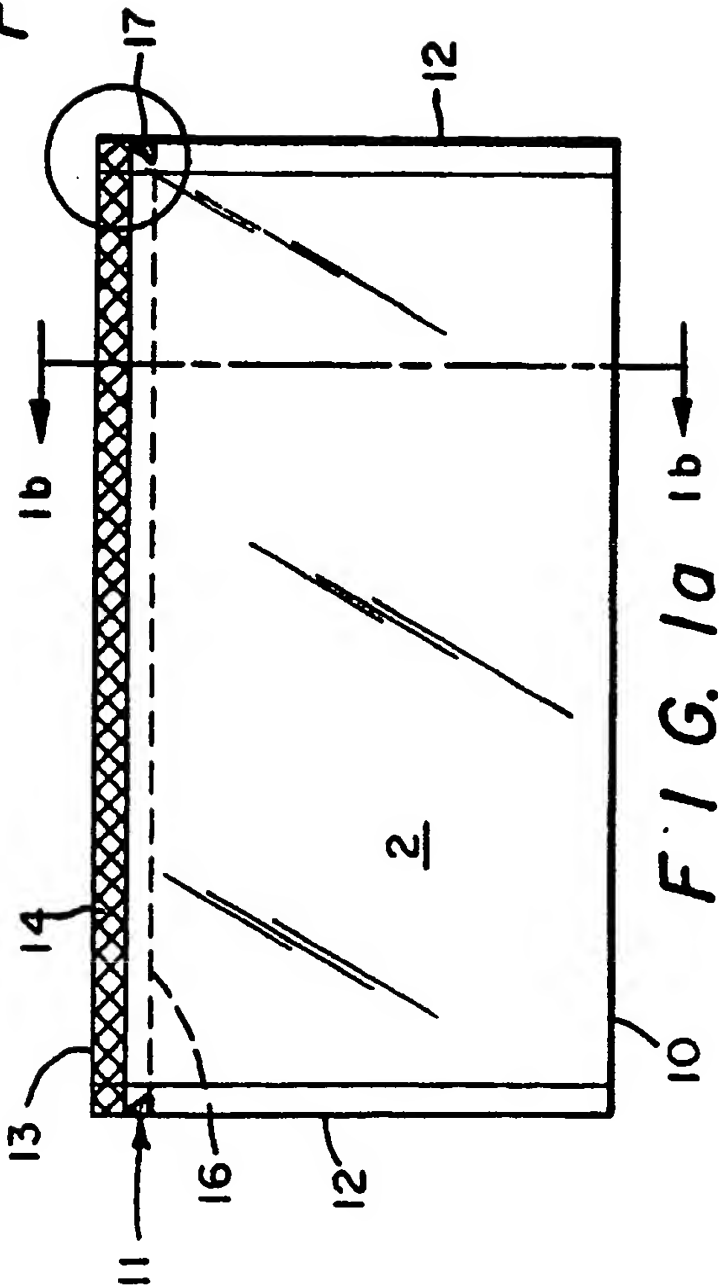


FIG. 1a

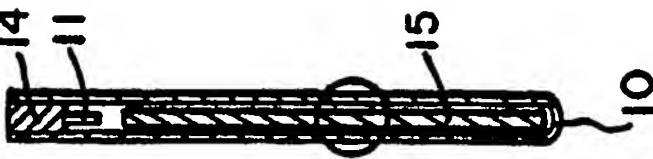


FIG. 2

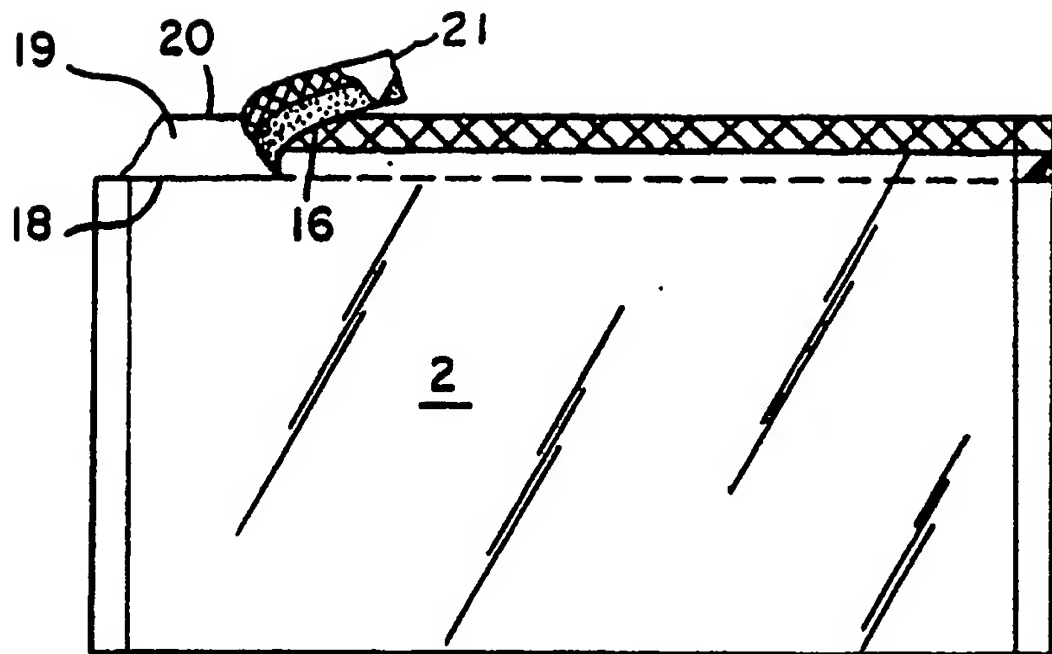


FIG. 3

